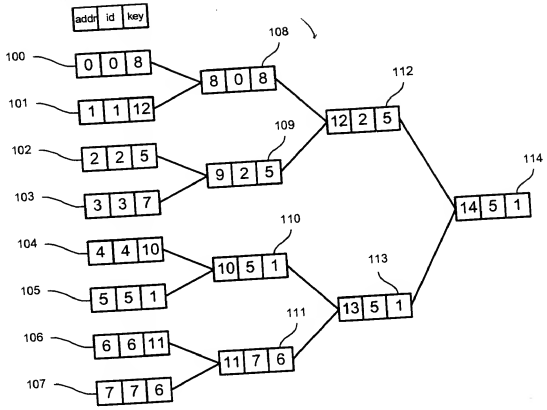
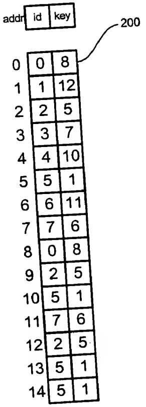


Figure 1



addr	id	key
0	0	8
1	1	12
2	2	5
3	3	7
4	4	10
5	5	1
6	6	11
7	7	6
8	0	8
9	2	5
10	5	1
11	7	6
12	2	5
13	5	1
14	5	1

Figure 2

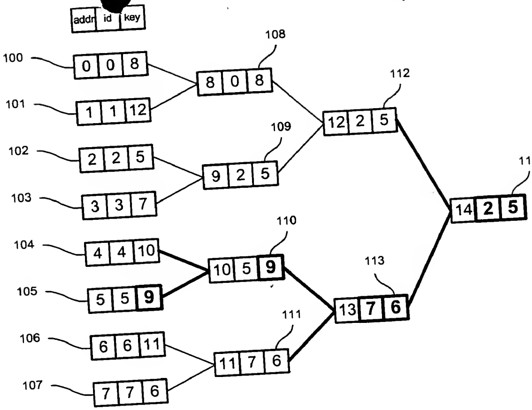


Figure 3

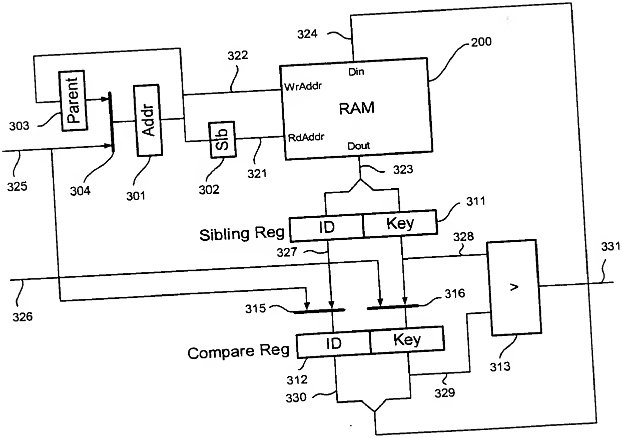


Figure 4

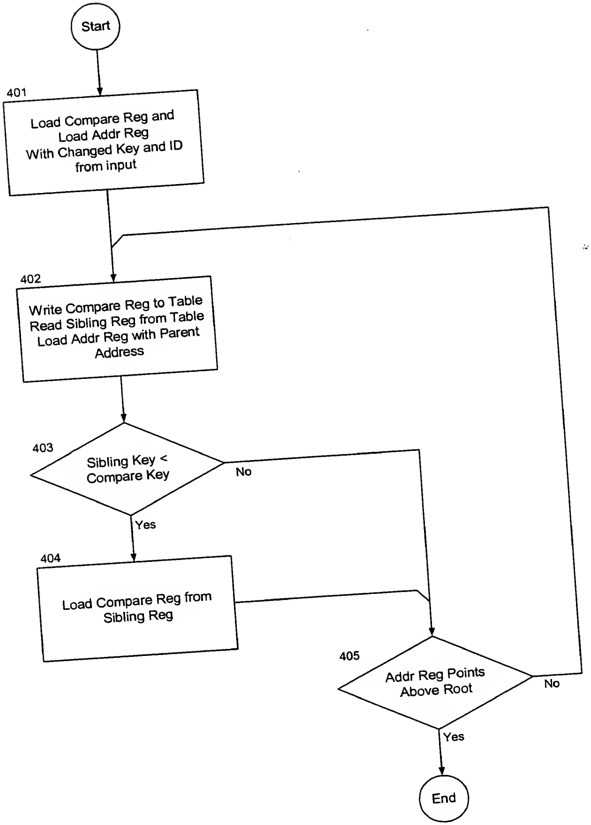

Start
401
Load Compare Reg and
Load Addr Reg
With Changed Key and ID
from input
402
Write Compare Reg to Table
Read Sibling Reg from Table
Load Addr Reg with Parent
Address
403
Sibling Key <
Compare Key
No
Yes
404
Load Compare Reg from
Sibling Reg
405
Addr Reg Points
Above Root
No
Yes
End

Figure 5

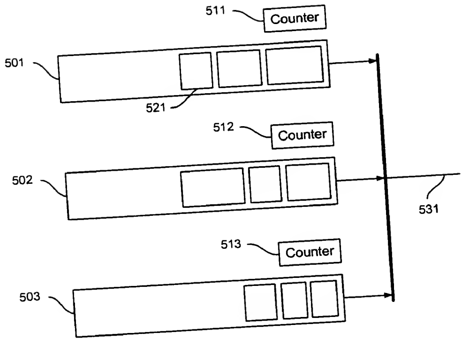


Figure 6
Prior Art

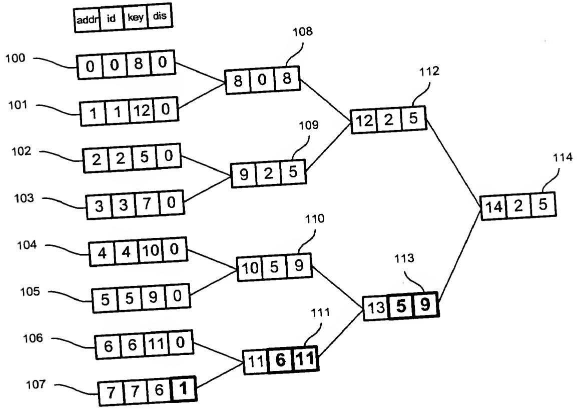


Figure 7

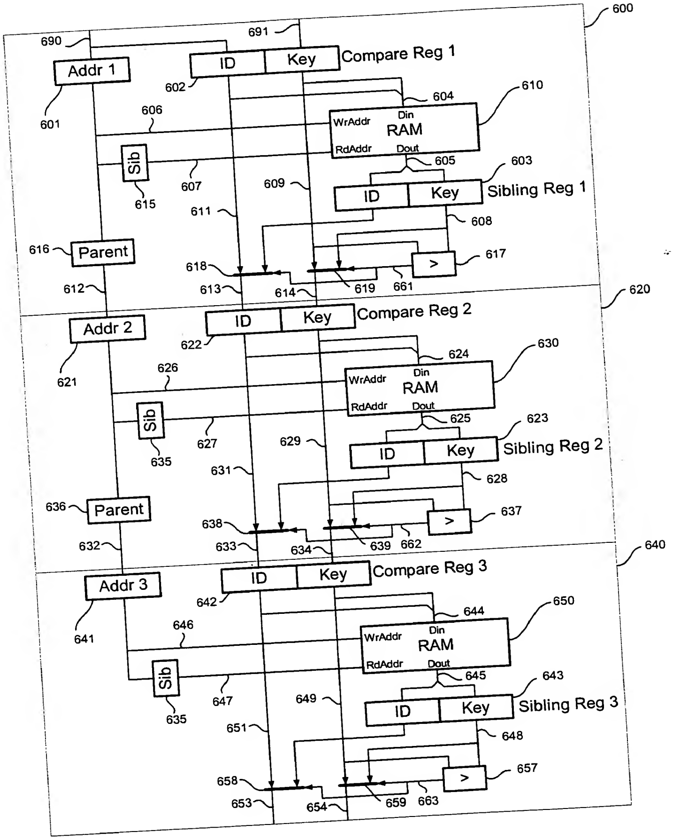

600
690
691
Addr 1
ID
Key
Compare Reg 1
602
604
610
601
606
WrAddr
Din
RAM
RdAddr
Dout
Sib
605
603
607
609
ID
Key
Sibling Reg 1
615
611
608
616
Parent
617
>
618
613
614
619
661
612
620
Addr 2
ID
Key
Compare Reg 2
622
624
630
621
626
WrAddr
Din
RAM
RdAddr
Dout
Sib
625
623
627
629
ID
Key
Sibling Reg 2
635
631
628
636
Parent
637
>
638
633
634
639
662
632
640
Addr 3
ID
Key
Compare Reg 3
642
644
650
641
646
WrAddr
Din
RAM
RdAddr
Dout
Sib
645
643
647
649
ID
Key
Sibling Reg 3
635
651
648
657
>
658
653
654
659
663

Figure 8

		Cycle				
		1	2	3	4	5
Register	Addr 1	5	7	2		
	Comp 1	5.9	7.d	2.15		
	Sib 1	4.10	6.11	3.7		
	Addr 2		10	11	9	
	Comp 2		5.9	6.11	3.7	
	Sib 2		7.6	5.9	0.8	
	Addr 3			13	13	12
	Comp 3			7.6	5.9	3.7
	Sib 3			2.5	2.5	5.9
	Result			2.5	2.5	3.7

Figure 9

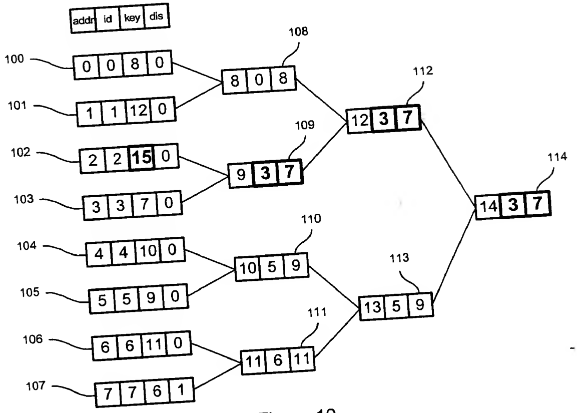


Figure 10

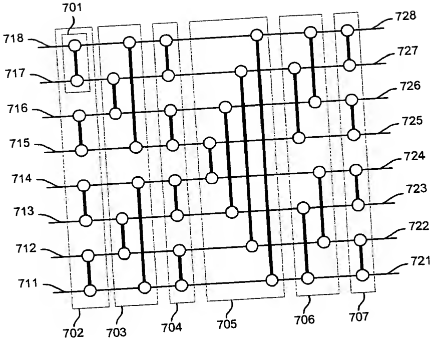


Figure 11

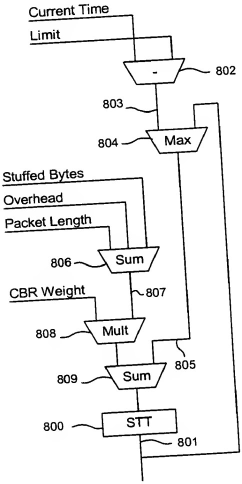


Figure 12

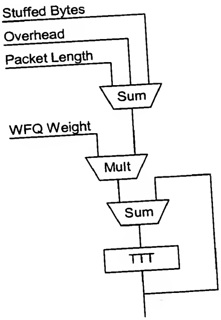


Figure 13

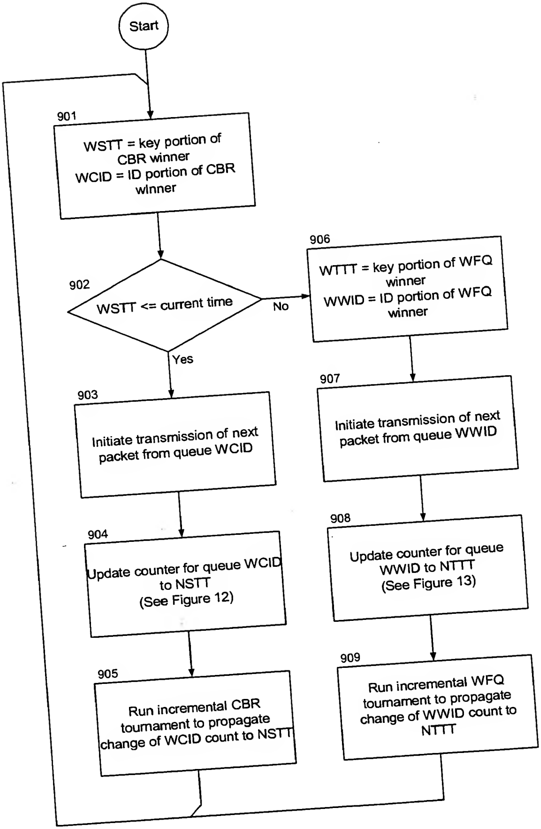

Start
901
WSTT = key portion of CBR winner
WCID = ID portion of CBR winner
902
WSTT <= current time
No
Yes
903
Initiate transmission of next packet from queue WCID
904
Update counter for queue WCID to NSTT
(See Figure 12)
905
Run incremental CBR tournament to propagate change of WCID count to NSTT
906
WTTT = key portion of WFQ winner
WWID = ID portion of WFQ winner
907
Initiate transmission of next packet from queue WWID
908
Update counter for queue WWID to NTTT
(See Figure 13)
909
Run incremental WFQ tournament to propagate change of WWID count to NTTT

Figure 14

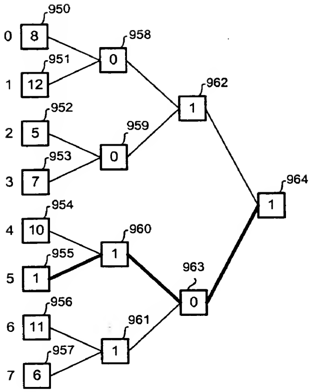


Figure 15

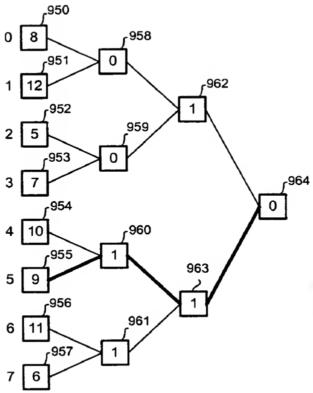


Figure 16

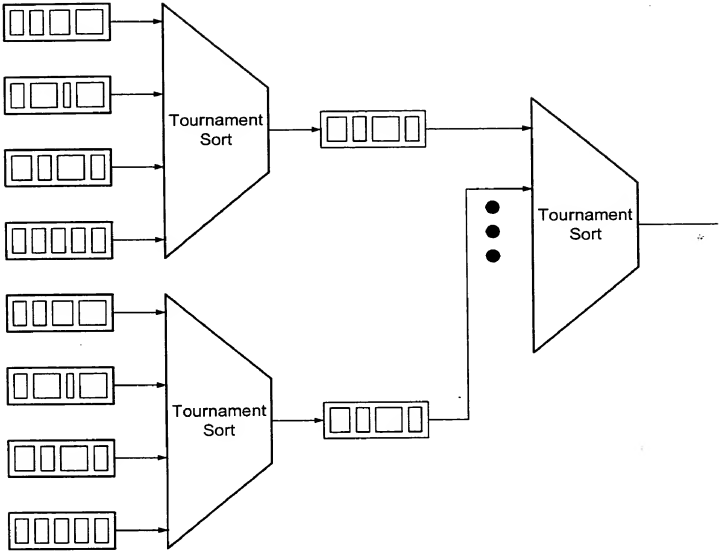


Figure 17

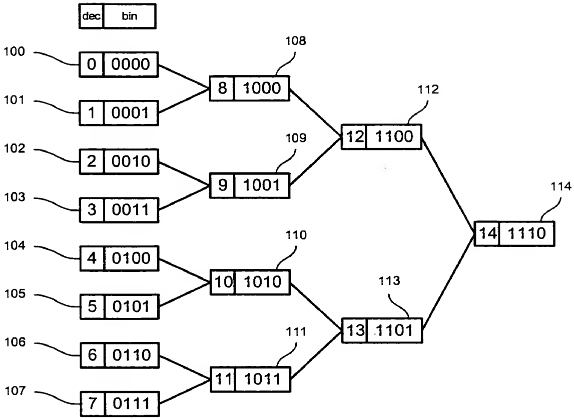

dec
bin
100
0 0000
101
1 0001
102
2 0010
103
3 0011
104
4 0100
105
5 0101
106
6 0110
107
7 0111
108
8 1000
109
9 1001
110
10 1010
111
11 1011
112
12 1100
113
13 1101
114
14 1110

Figure 18

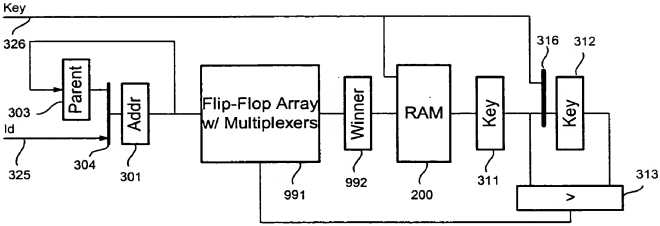

Key
326
Parent
303
Id
325
304
Addr
301
Flip-Flop Array w/ Multiplexers
991
Winner
992
RAM
200
Key
311
316
312
Key
313
>

Figure 19

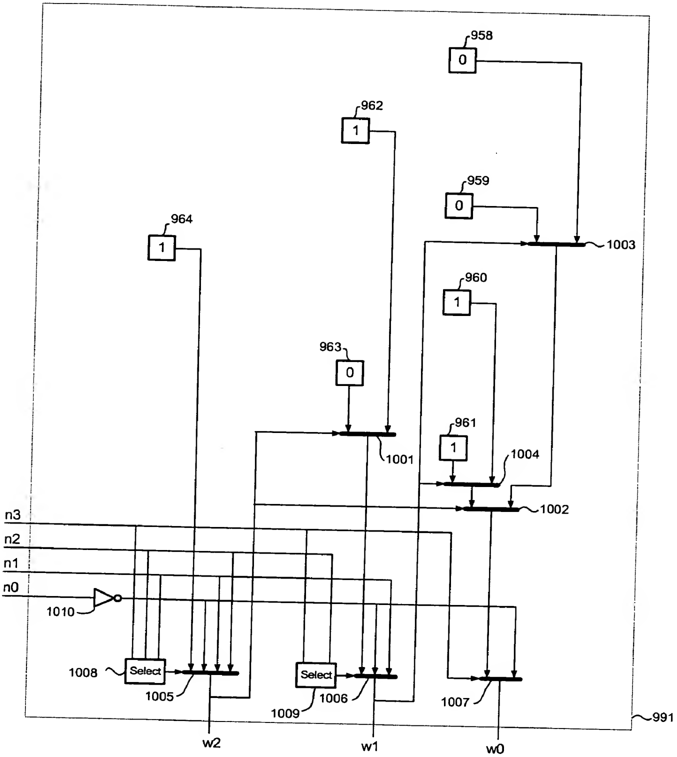

958
0
962
1
959
0
964
1
1003
960
1
963
0
961
1
1004
1001
1002
n3
n2
n1
n0
1010
1008
Select
Select
1005
1006
1009
1007
991
w2
w1
w0

Figure 20